Early Journal Content on JSTOR, Free to Anyone in the World

This article is one of nearly 500,000 scholarly works digitized and made freely available to everyone in the world by JSTOR.

Known as the Early Journal Content, this set of works include research articles, news, letters, and other writings published in more than 200 of the oldest leading academic journals. The works date from the mid-seventeenth to the early twentieth centuries.

We encourage people to read and share the Early Journal Content openly and to tell others that this resource exists. People may post this content online or redistribute in any way for non-commercial purposes.

Read more about Early Journal Content at http://about.jstor.org/participate-jstor/individuals/early-journal-content.

JSTOR is a digital library of academic journals, books, and primary source objects. JSTOR helps people discover, use, and build upon a wide range of content through a powerful research and teaching platform, and preserves this content for future generations. JSTOR is part of ITHAKA, a not-for-profit organization that also includes Ithaka S+R and Portico. For more information about JSTOR, please contact support@jstor.org.

$$A \text{———————} P \text{———————} Q \text{———————} B$$

$P=S=\int_{-a}^{l-a}xdx=\frac{1}{2}[l^2-2al]$. $\frac{dS}{da}=-2l=0$ for minimum, *i. e.*, $l=0$ which is an absurdity. The sum of squares a minimum *will* hold in this case.

V. The same proof that Prof. Zerr gives will hold for *any* power of the distance, which proposition is highly improbable.

31. **Proposed by F. P. MATZ, D. Sc., Ph. D., Professor of Mathematics and Astronomy in Irving College, Mechanicsburg, Penn.**

In order that a vertical cylindric stalk may be severed by a blow of minimum force, the stalk must be struck at what inclination by a sharp wedge-shaped blade?

Solution by G. B. M. ZERR, A. M., Ph. D., Professor of Mathematics and Applied Science in Texarkana College, Texarkana, Ark.-Tex.

Let $f\phi(\theta)$=the force necessary to sever a unit of area, where θ is the inclination to the horizon. Let r=radius of stalk.

$\therefore$ The area of section made in cutting is $\pi r^2\sec\theta$, the area of an ellipse with semi-axes r and $r\sec\theta$. $\therefore \pi r^2 f\sec\theta\phi(\theta)$=a minimum. This can be made a minimum when $\phi(\theta)$ is known. If $f\phi(\theta)=a+b\cos^2\theta$, then $\theta=\sin^{-1}\sqrt{1-\frac{a}{b}}$.

32. **Proposed by S. H. WRIGHT, M. D., A. M., Ph. D., Penn Yan, New York.**

Intermittent reflections of flashes of light on a clear sky after dark, indicated a storm was progressing *below* the horizon. Refraction of 34′ on the horizon, brought the upper edge of the storm-cloud up to the horizon, and was just visible. How far off was the storm if the cloud was one mile above the earth?

I. Solution by the PROPOSER.

In the plane triangle ABC, let C be the center of the Earth, A the place of the observer, and B that of the cloud. Then AC=Earth's mean radius=3959 miles, $=b$, BC=3960 miles, $=a$, $AB=c$, the required distance. The angle BAC=the nadir distance of the cloud, being $90^\circ-34'=89^\circ 26'=A$. Then

$\sin B=\frac{b\sin A}{a}$. $\therefore B=88^\circ 35'36''$, and $180^\circ-(A+B=1^\circ 58'24''=C$, and

$$c=\frac{b\sin C}{\sin B}=\frac{a\sin C}{\sin A}=136.367 \text{ miles.}$$

II. Solution by G. B. M. ZERR, A. M., Ph. D., Professor of Mathematics and Applied Science in Texarkana College, Texarkana, Ark.-Tex.

Let A be the position of the observer, B the cloud, O the center of the earth, R=mean radius of the earth=3958 miles.

$$\therefore AC=2R\sin\tfrac{1}{2}AOC. \quad \angle ACB=\frac{\pi}{2}+\tfrac{1}{2}AOC, \quad \angle BAC=\tfrac{1}{2}AOC-34'.$$